

## NOTES ON *ERYTHRANTHE ORIZABAE* (PHRYMACEAE)

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### ABSTRACT

*Erythranthe orizabae* (synonyms: *Mimulus pachystylus*, *Mimulus orizabae*) occurs from Guatemala north in Mexico to Veracruz and Hidalgo. Its closest relatives are hypothesized to be a group of six species of southeastern Asia, from Japan through China to the Himalayas. Typification and a description of *E. orizabae* are provided and citation of representative specimens documents its known geographic distribution.

**KEY WORDS:** *Mimulus pachystylus*, *Mimulus orizabae*, *Erythranthe orizabae*, Mexico

Study of *Mimulus* in the broad sense, in preparation of the FNANM treatment and in anticipation of recognizing segregate genera, has resulted in a better understanding of a species endemic to Guatemala and southern Mexico. *Mimulus pachystylus*, as treated by Grant (1924) and generally recognized as such elsewhere (e.g., Standley & Williams 1973) proves to have an earlier name and has been treated by Barker et al. (2012) within the genus *Erythranthe* Spach.

*Erythranthe orizabae* (Benth.) Nesom, Phytoneuron 2011-39: 41. 2012. *Mimulus orizabae* Benth., Prodr. (DC.) 10: 372. 1846. **TYPE: MEXICO.** [Veracruz, presumably:] "In monte Orizabae Mexicanorum," April 1838, *J. Linden 1092* (holotype: K digital image! photo-MO!).

*Mimulus pachystylus* A.L. Grant, Ann. Missouri Bot. Gard. 11: 234. 1924. **TYPE: MEXICO. Chiapas.** Cerro del Boqueron, Aug 1913, *C.A. Purpus 7015* (holotype: MO!; isotypes: BM, F digital image!, UC, US digital image!).

**Perennial**, rhizomatous and rooting at the nodes. Stems prostrate, 10–30 cm, mostly simple, lignescent. **Stems and pedicels** arachnoid-villous with multicellular hairs with colored crosswalls, eglandular. **Leaves:** basal not persistent; blades ovate to broadly ovate, 10–30 mm x 5–20 mm, venation suprabasal-acrodromous (pinnate) with slight tendency to appear brochidodromous (Fig. 3), glabrous on both surfaces or coarsely pilose abaxially along veins, eglandular, margins coarsely dentate to serrate, apex acute to obtuse, base rounded, petioles 3–9 mm. **Calyces** in flower 9–12 mm and campanulate, in fruit 12–16 mm and cylindric-campanulate, weakly inflated, crinkly villous on the angles with long hairs with colored crosswalls, lobes subequal, erect, convex to deltate-subulate or nearly obsolete and represented only by a mucro, the calyx apex then nearly truncate except for the slightly longer upper lobe. **Fruiting pedicels** 10–20(–60) mm. **Corollas** yellow, with 2 lines of red dots along the bottom of the tube, tube cylindric-funnelform, 12–16 mm, strongly bilabiate and sagittally compressed, throats open, ventral ridges prominent. **Anthers** included, glabrous. **Capsule** included, narrowly elliptic-ovoid, 7–9 mm; placentation axile. Chromosome number not reported.

Flowering Mar–Aug. Cloud forest, oak woods; 1700–3100 m; Guatemala, Mexico (Chiapas, Hidalgo, Oaxaca, Veracruz).

**Representative collections.** **GUATEMALA.** Mpio. San Mateo Ixatatan, cloud forest near the place called Kurus Lemun, 4 mi E of San Mateo Ixatatan along road to Barillas, 8500 ft, 7 Aug 1965, *Breedlove 11642* (MO); [Depto. Escuintla,] Santa Rosa, near Escuintla, in virgin forest, 1600 m, 20 Jun 1941, *Matuda 4246* (LL, MO). **MEXICO. Chiapas.** Mpio. San Cristobal las Casas, steep NE slope of Zonehuitz, heavily wooded, 9300 ft, 11 Jul 1966, *Breedlove 14525* (MO); [Mpio. Siltepec,] [Santa Isabel Zijan] Fraylesca, near Siltepec, 11 Mar 1945, *Matuda 5234* (LL-2 sheets);



Figure 1. Isotype collection of *Mimulus pachystylus* A.L. Grant (US).



Figure 2. Leaf of *Erythranthe orizabae* (from US isotype of *Mimulus pachystylus* shown in Fig. 1).

Cerro del Boqueron, Aug 1913, *Purpus* 7015 (UC). **Hidalgo**. Mpio. de Tenango de Doria, 10 km al W de Tenango de Doria, bosque de encinos, ailes y *Liquidambar* principalmente, 1700–1800 m, 10 May 1980, *Hernández Magaña and Hernández V.* 4311 (MO). **Oaxaca**. Mpio. San Felipe Usila, cuenca del Rio Perfume (ladera), 7.5 km en línea recta al S de Santa Cruz Tepetotutla, en un arroyo, bosque mesófilo de montaña, 2230 m, 3 Apr 1994, *Gallardo H. et al.* 1044 (MO).

Grant (1924) included a brief description of *Mimulus orizabae*, essentially translated from Bentham's protologue, and placed it among a group of "doubtful and little-known species." Her description of *Mimulus pachystylus* was much fuller. She knew the species only from Chiapas but collections are recorded here from Guatemala, Chiapas, Oaxaca, Puebla, Veracruz (whence the type of *Mimulus orizabae*), and Hidalgo. No species of *Mimulus*, however, has apparently been previously included in accounts of the Veracruz flora (see comments by Durán-Espinosa 2006), nor was *Mimulus orizabae* reported by Rodríguez J. (2001) for the Valley of Mexico.

The generic placement of *Erythranthe orizabae* is indicated by its parietal placentation, relatively long pedicels, and suprabasal-acrodromous leaf venation. As a species, it is characterized by herbaceous, prostrate stems rooting at the nodes, young stems and adaxial leaf surfaces arachnoid-villous with long, viscid, crinkly hairs sometimes with colored cross walls, leaves petiolate with ovate, pinnately veined, serrate-margined blades, sometimes bicolored with a lighter abaxial surface, and yellow, bilabiate and strongly sagittally compressed corollas with an open throat.

*Erythranthe orizabae* is superficially similar to *E. moschata* (Douglas ex Lindl.) Nesom, which has prostrate to ascending stems and petiolate leaves, but the latter occurs in the northern USA and Canada and *E. moschata* and its closest relatives (*Erythranthe* sect. *Mimulosma*, Nesom 2011) are characterized by a vestiture that includes stipitate-glandular hairs. The closest evolutionary relationship of *E. orizabae* is hypothesized here to be with a group of species otherwise similar to sect. *Mimulosma* but mostly without glandular hairs and with more pronounced suprabasal-acrodromous venation — *Erythranthe* sect. *Mimulasia* (see Barker et al. 2012), species mostly of southeastern Asia from Japan through China to the Himalayas but also including *E. dentata* (Nutt. ex Benth.) Nesom of the Pacific Northwest.

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